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Unique Bimetallic Cu/Cd Complex with Crystal Structure Dependent on Temperature. O.V. Nesterova,¹ S.R. Petrusenko,¹ V.N. Kokozay¹, O.V. Shishkin², ¹Chemistry Dept., National Taras Shevchenko Univ., Volodymyrska Str. 64, Kyiv 01033, Ukraine, ²STC "Inst. for Single Crystals", National Academy of Sciences of Ukraine, Lenina ave. 60, Kharkov 61001, Ukraine.

Synthesis of multicomponent materials by self-assembly of molecular species into covalently or noncovalently joined aggregates is one of the most useful approaches to obtain new functional materials. The reaction of copper powder, cadmium oxide and ammonia acetate in methanol solution of ethylenediamine (en) affords the complex $\{[\text{Cu}(\text{en})_2][\text{Cd}_2(\text{OAc})_6]\}_n$ I (red crystals), the crystal structure of which consists of the unique 1D ladder-like anions $[\text{Cd}_2(\text{OAc})_6]^{2-}_n$ and cations $[\text{Cu}(\text{en})_2]^{2+}$. After heating these crystals up to 150°C, the crystal structure is transformed so that a new type of polymeric chains $[\text{Cu}(\text{en})_2\text{Cd}_2(\text{OAc})_6]_n$ II (dark violet crystals) are formed. The coordination geometry of the Cu(II) atom in I is square planar [closest axial contacts Cu...O of 3.084(2) Å] while in II it is elongated octahedral with the axial Cu–O bond distances of 2.744(10) Å.

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